

SOLAR CELL STRUCTURE WITH INTEGRATED
DISCRETE BY-PASS DIODE

ABSTRACT OF THE DISCLOSURE

A solar cell structure has a solar cell unit structure including a heat sink, and a solar cell having a front side, a back side, and a solar-cell projected area coverage on the heat sink. The solar cell has an active semiconductor structure that produces a voltage between the front side and the back side when the front side is illuminated. An intermediate structure is disposed between and joined to the back side of the solar cell and to the heat sink. The intermediate structure has an intermediate-structure projected area coverage on the heat sink and includes a by-pass diode having a diode projected area coverage on the heat sink. The diode projected area coverage on the heat sink may be substantially the same as the intermediate-structure projected coverage on the heat sink. Alternatively, the diode projected area coverage on the heat sink may be less than the solar-cell projected area coverage on the heat sink, and the intermediate structure further includes a substrate coplanar with the by-pass diode.